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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In the Application of: Joseph W. Triepels et al.)
Serial No.: 09/519,551) Group Art Unit: 2674
Filing Date: March 6, 2000) Examiner: Abbas Abdulselam
For: DISPLAY DEVICE)
)

Dated at Stamford, Connecticut, this 24th day of May 2004.

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P.O. Box 1450
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APPELLANT(S) APPEAL BRIEF

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I. INTRODUCTION

In accordance with the provisions of 35 U.S.C. § 134 and 37 C.F.R. §§ 1.191 and 1.192, this Appeal Brief is submitted in triplicate in support of the appeal from the Office action dated January 13, 2004, finally rejecting claims 1-10.

A. Real Party In Interest

Appellant(s) have assigned their interests in the subject application to U.S. Philips Corporation.

B. Related Appeals and Interferences

None.

II. STATUS OF THE CLAIMS

A. Status of Pending Claims

Claims 1-10 have been finally rejected under 35 U.S.C. § 103, and each of these claims are on appeal.

B. Status of Canceled Claims

No canceled claims.

III. STATUS OF THE AMENDMENTS

There were no amendments filed subsequent to the final rejection of this application. Appellant(s) filed a Response to Office Action (Final Rejection) under 37 C.F.R. § 1.116 on February 19, 2004, offering arguments to overcome the rejection. An Advisory Action was then issued stating that Appellant(s) arguments contained in the response failed to place the application in condition for allowance.

IV. SUMMARY OF THE INVENTION

Appellant(s) claimed invention is directed to a display device with a conductor pattern on a first substrate connected to an electrically conducting pattern on a laminar substrate or foil at an area of through-connection. By providing one or more through-connections just along an edge of an actual display section (i.e., close to the pixels), the resistance of the conductor pattern (usually ITO tracks) hardly influences the total resistance. In one embodiment of the present invention, the foil allows direct external contact to be realized. In this embodiment the foil is flexible so as to be bendable around and edge of the substrate. In another embodiment of the present invention, electrically conducting patterns on both sides of the foil form a cross-connection suitable for increasing the number of possibilities of designing a circuit to be realized on the foil. The invention may be applicable to display devices that are based on liquid crystal effects and/or other electro-optical effects, in which an electro-optical material is present between two substrates. For instance, in still another embodiment of the present invention, the display device can have a second substrate and an electro-optical material between the two (i.e., first and second) substrates, each provided with picture electrodes, for example, defining pixels

together with the interpositioned electro-optical material. The display device may also be based on an electroluminescent effect.

At least one advantage of the present invention is found in the ability to provide a display device having a first substrate which is provided with a conductor pattern suitable for electrically connecting pixels in which, in a reliable manner, the surface of a first substrate has low-ohmic conductors which are connected to the exterior while simultaneously obtaining a maximum freedom of design.

V. ISSUE ON APPEAL

Whether claims 1-10 are properly rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,838,400 to Ueda et al. (the “Ueda patent”) in view of U.S. Patent No. 5,851,709 to Grande et al (the “Grande patent”).

VI. GROUPING OF CLAIMS

The claims on appeal before the Board of Patent Appeals and Interferences are claims 1-10. All of the claims 1-10 relate to a display device.

All of the claim(s) on appeal are set forth in the Appendix, and the independent claim 1 is set forth below:

1. A display device comprising a first substrate having a conductor pattern for electrically connecting pixels, and having a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at

least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels.

Pursuant to 37 C.F.R. § 1.192(c)(7), Appellant(s) hereby groups the pending claims for purposes of appeal as follows:

Claims 1-10 stand rejected under 35 U.S.C. § 103 over the Ueda patent in view of the Grande patent	The rejected claims do not all stand or fall together. As set forth in the Argument below, claims 2-5, 7 and 9 are each separately patentable.
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VII. ARGUMENT

Claims 1-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Ueda patent in view of the Grande patent.

With respect to independent claim 1, from which claims 2 through 10 depend, the Examiner states that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ueda’s liquid crystal display system to adopt Grande’s substrate (100) as arranged in Fig. 4D. One would have been motivated in view of the suggestion in Grande that a substrate (100) along with an opening (114) and pixels (332) as illustrated in Fig. 4D equivalently provides the desired single laminar substrate with at least one opening proximate to the pixels. The use of a substrate (100) helps function electroluminescent display devices as taught by Grande et al.” (See Action, page 2). The Examiner’s grounds for rejecting claim 1 are hereinafter traversed, and reconsideration is respectfully requested.

To establish a *prima facie* case of obviousness, the following criteria must be met: (1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the teachings of the references; (2) There must be a reasonable expectation of success found in the prior art, not the applicant's disclosure; and (3) The prior art references must teach or suggest all of the claim limitation(s). M.P.E.P. § 2142. "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." M.P.E.P. § 2141.02, citing W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 496 U.S. 851 (1984).

A. There Is No Suggestion Or Motivation In The Prior Art To Modify The Liquid Crystal Display System Suggested By The Ueda Patent To Include Substrate (100) As Arranged in Fig. 4D Of The Grande Patent.

The Ueda patent is directed to a liquid crystal display device in which a peripheral circuit board positioned in the outer periphery of a seal port is recessed to avoid the projection of the seal port and in which a fluorescent tube has its two lamp cables arranged around the four sides of a crystal display element, so that the substrate at the seal port side and the lamp cable of a side light type back light can be packaged in compact.

In pertinent part, the Ueda patent suggests/discloses "two or more conductor layers, e.g., four conductor layers L1 to L4 ... electrically connected through via holes VIA (as shown in FIG. 14). In addition, the Ueda patent suggests/discloses (1) "individual conductor layers are fixed by an adhesive agent BIN while sandwiching intermediate layers of polyimide films BFI as the insulating layers; (2) "conductor layers are coated excepting the output terminals TM with

the insulating layers; and (3) “[i]n the multi-layered wiring line portion FML, a solder resist SRS is applied to the uppermost and lowermost layers so as to ensure the insulations.” (See, col. 14, lines 48-67 to col. 15, lines 1-2).

Ueda et al. specifically noted, *inter alia*, the following intended benefits derived from their suggested/disclosed multi-layered substrate: (1) “The advantage of the multi-layered flexible substrate is that the conductor layer L3 containing the connecting terminal portion TM necessary for the COG packaging can be integrated with other conductor layers thereby to reduce the number of parts” (See, col. 15, lines 3-7); (2) “Thanks to the construction of two or more conductor layers, moreover, the portion FML can be less deformed and hard so that it can have a positioning hole FHL arranged therein” (See, col. 15, lines 8-11); (3) “This construction of the two conductor layers L2 and L3 is effective for the case, in which the input terminal wiring lines Td to the drive ICs have their pitch narrowed” (See, col. 15, lines 22-25); and (4) “[T]he multi-layered flexible substrate can be accurately folded without imparting any bending stress to the connecting terminal portion TM” (See, col. 15, lines 41-43).

In clear contrast to that which is suggested/disclosed in the Ueda patent, the Grande patent is directed to a method for selective transfer of a color organic layer. That is, the Grande patent suggests/discloses “a substrate 100 having a first surface 111 and an opposing second surface 112 in which openings 114 of a width dimension W extend from the second surface to the first surface”. (See, col. 9, lines 5-8) The Grande patent further suggests/discloses a light absorbing layer 215 on a light transmissive support 200 in contact with the second surface 112 of the substrate 100 and a color forming organic donor layer 116 formed in the openings 114 on the

light absorbing layer 215 and on the first surface 111 between the openings 114. (See, col. 9, lines 11-19) This substrate arrangement is intended to facilitate the selective transfer of a color organic layer via a vaporization process. That is, as disclosed/suggested by the Grande patent, the selective transfer of a color organic layer is accomplished by the vaporization of a color forming organic donor layer “previously disposed on the light absorbing layer within the openings 114 in the substrate 100.” (See, col. 9, lines 27-30) The transfer of the color forming organic donor layer through the openings 114 “provides a selectively transferred color organic layer 336 on designated pixels 332 of a device 300”. (emphasis added) (See, col. 9, lines 32-34) Moreover, after the selective transfer to designated subpixels of a device of one color (for example, a red color), donor layer residue is removed from the substrate and a donor layer capable of forming another color (for example, a green color) is then deposited on the substrate and the device 300 is repositioned with respect to the donor layer of such other color and the selective transfer of this second donor layer to the designated subpixels of the device 300 then commences. (See, col. 9, lines 52-63).

Grande et al. specifically stated that the major advantages associated with their suggested/disclosed method for selective transfer to a device from a color forming organic donor layer bearing structure upon exposure to radiation include: (1) high pixel resolution and edge definition of transferred layers; (2) excellent utilization of the color forming organic donor layer; (3) precise control of the thickness of each selectively transferred color forming organic layer; (4) in scalability to large area device; and (5) compact deposition tooling. (See, col. 3, lines 5-10).

Thus, at least from the foregoing, it is clear that the Ueda patent, which is specifically directed to a multi-layered substrate arrangement suitable to improve the size/shape (e.g., via part reduction) of an LCD display device, does not address the problem of providing a way for the selective transfer of an organic colorant layer from a donor layer to an image sensing device commensurate with reduced pixel dimensions. (*See*, col. 2, lines 25-28) The reverse is also true. That is, the substrate arrangement suggested/disclosed in the Grande patent, which is specifically for transferring, via a vaporization process, an organic color donor layer onto selected pixels as desired, does not address problems associated with parts reduction and/or the size/shape of an LCD display device. Accordingly, it is respectfully submitted that, notwithstanding the Examiner's assertions, there is no suggestion or motivation in either reference to modify the liquid crystal display system of the Ueda patent to include the substrate/opening arrangement of the Grande patent. Why would one of ordinary skill in the art want to adopt a substrate/opening arrangement specifically configured for the selective transfer of an organic colorant layer from a donor layer onto a pixel so as to modify a multi-layered substrate system requiring two or more conductor layers electrically connected via a through-connection? There is no reasonable basis for concluding that one of ordinary skill in the art would think to make such a combination. Accordingly, the prior art references do not teach or suggest modifying the Ueda patent in view of the Grande patent and thus it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness for at least this reason.

B. There Would Not Be A Reasonable Expectation Of Success In Modifying The Liquid Crystal Display System Suggested By The Ueda Patent To Adapt Substrate (100) As Arranged in Fig. 4D Of The Grande Patent.

Each prior art reference must be considered in its entirety, including those portions that would lead away from the claimed invention. M.P.E.P. § 2141.02. Both the Ueda patent and the Grande patent – when considered in their entireties as they must be – effectively teach away from the proposed combination. Clearly then, there would not be a reasonable expectation of success in modifying Ueda et al.’s liquid crystal display system to include Grande et al.’s substrate/transfer opening arrangement.

As noted above with respect to the Ueda patent, one of the requirements associated with Ueda et al.’s proposed multi-layered substrate arrangement is that it facilitates electrical communication among multiple conductive layers. (*See*, col. 14, lines 55-57) In order to satisfy this electrical through-connection requirement Ueda et al. specifically teaches the use of fixed “via holes” (best shown in Figs. 7B and 14). To modify Ueda et al.’s multi-layered substrate arrangement so as to allow for the selective transfer of various organic colorant layers from different donor layers onto certain predefined pixels by vaporization of the donor layers through predefined substrate “openings”, which openings must remain open in order to allow for the effective transfer of different colored donor layers onto selected pixels as required by Grande et al.’s invention, would be inconsistent with the teachings of Ueda et al. and would diminish, if not entirely eliminate, effective electrical communication between the multiple substrate layers by the via holes, and thus defeat a significant object of Ueda et al.’s invention. Accordingly, at least for this reason, it is respectfully submitted that when taken in their entirety, the cited references

teach away from the modification suggested by the Examiner, and hence it is further respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness.

C. The Prior Art References Do Not Teach Or Suggest All Of The Claim Limitations.

Even if it were proper to modify Ueda et al.'s liquid crystal system in the manner suggested by the Examiner in view of the Grande patent, which modification Appellant(s) respectfully dispute, the resulting combination would not meet the terms of the present claimed invention. That is, as noted by the Examiner, the Ueda patent clearly "does not teach the use of a single laminar substrate with electrically conducting patterns on opposite sides connected via opening such that at least one opening is proximate the pixels." (emphasis added) (See, Office Action of 1-13-04, page 1). Furthermore, as set forth above, the Grande patent, which was cited by the Examiner to address the deficiencies of the Ueda patent, merely teaches a method for utilizing a substrate having a plurality of openings suitable to facilitate in the selective transfer of color organic layers "on designated pixels". (emphasis added) (See, col. 9, lines 32-34). It follows then that there is no teaching, suggestion or disclosure anywhere in the references of record to provide "a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels" (emphasis added), as recited in present claim 1. It is by positioning the electrical through-connection opening close/proximate to the pixels that the resistance of the conductor pattern has a minimal impact on total resistance. Thus, as the cited reference fail to disclose or suggest each

and every element of Applicant(s) claimed invention, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness.

D. Claims 2-5, 7 and 9 Are Separately Patentable.

Notwithstanding the fact that claims 2 through 10, which depend either directly or indirectly from claim 1, are patentable at least for the reasons outlined above, claims 2-5, 7 and 9 are separately patentable.

With regard to claim 2, the Examiner suggests that the Ueda patent teaches “electronic parts related to shield casins[sic] mounted in a flexible substrates[sic] the portion of which is composed of conductor. See column 4, lines 41-44”. (See, Office Action of 1-13-04, page 2). It is respectfully noted that the Ueda patent more specifically teaches “electronic parts mounted only on one side at the portion of the multi-layered flexible substrate, this portion is composed of two or more conductive layers, and the electronic parts are positioned in an opening of the shield casing.” (emphasis added) (See, col. 4, lines 41-44). In addition, the Grande patent teaches “a surface conductor layer formed of a solid or mesh-shaped pattern portion fixed at the ground, and a surface conductor layer of an opposite side, having electronic parts mounted on the side” (emphasis added) (See, col. 5, lines 17-22). It is thus respectfully submitted that the Ueda patent does not disclose/suggest that “conducting patterns on both sides of [a] foil are metal patterns” (emphasized), as recited in claim 2. In addition, the Grande patent fails to correct the deficiencies of the Ueda patent. Accordingly, as neither of the cited references, nor the combination thereof, suggest/disclose all of the required elements of claim 2, it is respectfully submitted that in furtherance of the reasons discussed above with respect to claim 1, the

Examiner has not established a *prima facie* case of obviousness with respect to claim 2 for at least this reason.

With respect to claim 3, the Examiner suggests that the Ueda patent teaches “a conductor layer L3, which is gold plated. See column 14, lines 57-59”. (See, Office Action of 1-13-04, page 2). It is respectfully noted that the Ueda patent more specifically teaches that “conductor layers L1 to L4 [and thus L3] are *made of copper* CU wiring lines, but only the conductor layer L3 is prepared by plating the copper CU with gold AU.” (emphasis added) (See, col. 14, lines 55-59). It is respectfully submitted that a conductor layer “made of copper” and plated with gold does not read on conducting metal patterns “chosen from a group of gold, silver and nickel”, as recited in claim 3. Further, it is noted that a Markush-type claim, like claim 3, can include independent and distinct inventions (See, MPEP 803.02). Thus, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 3 at least for these reasons.

With respect to claims 4 and 5, the Examiner suggests that the Ueda patent teaches “that multi layer flexible substrate has its portion made of conductor layers, which is electrically connected with insulating substrate through conductive film. See column 4, lines 24-30.” (See, Office Action of 1-13-04, page 2). It is respectfully noted that the Ueda patent more specifically teaches “the multi-layered flexible substrate has its pattern portion made of either two or less conductor layers and this portion is electrically connected with the input terminal pattern to the drive ICs on the transparent insulating substrate through an anisotropic conductive film.” (emphasis added) (See, col. 4, lines 24-30). It is respectfully submitted that the foregoing

excerpt, contrary to the suggestion of the Examiner, does not read on “[a] conductor pattern on said first substrate is connected to an electrically conducting pattern on said foil at an area of a through-connection” (emphasis added), as recited in claim 4. That is, electrically connecting a multi-layered flexible substrate with the input terminal pattern to a drive ICs on a transparent insulating substrate via an anisotropic conductive film is not the same as connecting a conductor pattern on a first substrate to an electrically conducting pattern on a foil at an area of a through-connection (i.e., an opening in the foil/laminar substrate). Accordingly, it is respectfully submitted that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claims 4 and 5 at least for this added reason.

With respect to claim 7, the Examiner suggests that the Ueda patent teaches “the wiring substrate which is made of multi-layered flexible substrate producing increased wiring density and increases pattern of conductor. See column 6, lines 34-45.” (See, Office Action of 1-13-04, page 3). It is respectfully noted that the Ueda patent more specifically teaches:

[T]he peripheral driver has its wiring substrate made of the multi-layered flexible substrate so that the wiring density can be enhanced while allowing the folding to take an advantage in the size reduction. Moreover, the ground pattern of the conductor layer fixed at a DC voltage can be formed over the surface layer to take an advantage for counter-measures against the EMI. Still moreover, the multi-layered flexible substrate is used in place of the TCP to make the joiner unnecessary between the peripheral circuit boards and the liquid crystal panel so that the parts number of the liquid crystal display device, such as the TCP can be reduced. (See, col. 6, lines 34-45).

It is respectfully submitted that the foregoing excerpt does not necessarily read on “at least one of said electrically conducting patterns contacts a conductor pattern on a further support”, as recited in claim 7. Thus, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness with respect to claim 9 at least for this added reason.

Finally, with respect to claim 9, the Examiner suggests that the Ueda patent teaches “applying a voltage to common transparent pixel electrode relative to configuration of substrate (sub 1) and (substrate sub 2). See column 16, lines 49-56.” (See, Office Action of 1-13-04, page 3). It is respectfully noted that the Ueda patent more specifically teaches:

a common transparent pixel electrode COM (as shown in Fig. 22), which is arranged as the opposed electrode of a liquid crystal capacitor C1c, inside of a transparent insulating substrate SUB2. Thus, the common voltage is applied through the wiring line Td pattern on the transparent insulating substrate SUB1 from the *conductive beads or paste* to the common transparent pixel electrode COM at the side of the transparent insulating substrate SUB2. (See, col 16, lines 49-56).

It is respectfully submitted that the foregoing excerpt, contrary to that which was suggested by the Examiner, does not read on “[a first substrate and] a second substrate and an electro-optical material between said two substrates, each provided with picture electrodes defining pixels together with said interpositioned electro-optical material”, as recited in claim 9. Hence, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness with respect to claim 9 at least for this added reason.

VIII. CONCLUSION

At least for the foregoing reasons, reversal of the Final Rejection of Claims 1-10 is warranted and such action is earnestly solicited.

Authorization is hereby given to charge our Deposit Account No. 50-1402 in the amount of \$330 for payment of the fee under 37 C.F.R. §1.17(c). No additional fee is believed to be required in connection with this filing. However, if an additional fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge our deposit account no. 50-1402.

Respectfully submitted,

May 24, 2004

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VIII. APPENDIX

1. (previously presented) A display device comprising a first substrate having a conductor pattern for electrically connecting pixels, and having a laminar substrate with opposed sides, which opposed sides are both provided with electrically conducting patterns that are electrically through-connected via at least one opening in the laminar substrate, wherein said at least one opening is proximate said pixels.
2. (previously presented) The display device of claim 1, wherein said electrically conducting patterns on both sides of said foil are metal patterns.
3. (previously presented) The display device of claim 2, wherein said metals are chosen from a group of gold, silver and nickel.
4. (previously presented) The display device of claim 1, wherein said conductor pattern on said first substrate is connected to an electrically conducting pattern on said foil at an area of a through-connection.
5. (previously presented) The display device of claim 4, wherein the part of said foil provided with said through-connections is secured to said substrate.
6. (previously presented) The display device of claim 1, wherein said foil is flexible.
7. (previously presented) The display device of claim 4, wherein at least one of said electrically conducting patterns contacts a conductor pattern on a further support.
8. (previously presented) The display device of claim 1, wherein electrically conducting patterns realized on both sides of said foil form a cross-section.

9. (previously presented) The display device of claim 1, wherein said display device has a second substrate and an electro-optical material between said two substrates, each provided with picture electrodes defining pixels together with said interpositioned electro-optical material.

10. (previously presented) The display device of claim 1, wherein said display device comprises an electroluminescent material.

File History:

Application Filed: March 6, 2000

1st Office Action: December 20, 2001 (rejected claims 1-10 under 35 USC 103)

1st Amendment: March 20, 2002 (remarks only, no amendments)

2nd Office Action: June 05, 2002

2nd Amendment: September 05, 2002 (remarks only, no amendments)

Final Office Action: November 19, 2002

Response to Final: December 20, 2002 (amended claim 1)

Advisory Action: January 24, 2003

Continued Prosecution Application (CPA) Filed: February 13, 2003

1st CPA Office Action: August 13, 2003 (rejected claims 1-10 on new grounds under 35 USC 103)

1st CPA Amendment: October 28, 2003 (claims 1-10 amended)

CPA Final Office Action: January 13, 2004

Response to CPA Final: February 19, 2004 (remarks only, no amendments)

Advisory Action: March 24, 2004

Notice of Appeal: April 12, 2004